Evolved Sea Sparrow Missile (ESSM)

Executive Summary
- Operational Evaluation (OPEVAL) was conducted in FY03 in accordance with a DOT&E-approved test plan. DOT&E delivered the beyond low-rate initial production report in January 2004. Evolved Sea Sparrow Missile (ESSM) is operationally suitable and the warhead is lethal. Operational effectiveness was undetermined.
- Although Follow-on Operational Test and Evaluation (FOT&E) was conducted in FY05, ESSM operational effectiveness against supersonic, low-altitude, maneuvering anti-ship cruise missiles remains undetermined.
- Additional FOT&E is required to demonstrate missile capability against threats represented by the targets which failed to operate during OPEVAL.

System
- The ESSM is a short-range, ship-to-air guided missile.
- The guidance section is derived from the North Atlantic Treaty Organization Sea Sparrow.
- It has a new, 10-inch diameter rocket motor.
- Aegis ships:
  - Provide the ESSM with command guidance plus target illumination for terminal homing during engagement sequences
  - Fired from MK 41 vertical launchers
- Non-Aegis ships:
  - Provide the ESSM with target illumination for homing throughout the entire engagement sequence
  - Fired from MK 29 box launchers
- The ESSM is in cooperative development among 13 nations.

Mission
- U.S. Navy surface forces use the ESSM for self protection primarily against supersonic, low-altitude, maneuvering anti-ship cruise missiles.

Activity
- FOT&E-1 occurred in March 2005 on USS *Momsen* (DDG 92) in accordance with a DOT&E-approved test plan. Testing included a stream raid presentation of two supersonic maneuvering targets. One of the targets failed in flight, and ESSM capability against the other target was not demonstrated.

Assessment
- ESSM operational effectiveness against supersonic maneuvering anti-ship cruise missiles remains undetermined.
- FOT&E is planned with an Aegis combat system to demonstrate missile performance:
  - Against a stream raid of supersonic, low-altitude, maneuvering anti-ship cruise missiles
  - Against supersonic, high diving targets
  - Against a Threat D target
  - In the presence of electronic jamming
  - After the missiles have undergone shipboard storage for the requisite duration
- FOT&E is planned when ESSM is integrated with non-Aegis combat systems.
- Limitations in the Aegis Weapon System Baseline 6.3 computer program and associated shipboard illumination radars, precluded testing ESSM's capability against surface targets. Although not an ESSM requirement, predecessor Sea Sparrow variants used in non-Aegis combat systems provided a useful capability against those threats.

Recommendations
1. As required testing includes testing ESSM against a Threat D target, the Navy should acquire credible Threat D surrogates.
2. Update the Test and Evaluation Master Plan to include FOT&E testing of ESSM when integrated with non-Aegis combat systems.